overcome the listed grounds of rejection.

Claim Rejections - 35 USC § 102

In paragraph 3, claims 11 and 24 were rejected under 35 U.S.C. 102(b) as being anticipated by Rostoker (US 5,644,102). The Office Actions stated as follows:

"Rostoker teaches a method of marking a chip forming a non-black, colored material layer over at least an exterior surface of the chip wherein the color identifies the chip, through FIG.'s . 3A-4B and *'A technique is described for providing body coloration and colored indicia for indicating one or more characteristics of an integrated circuit device. Package body coloration is one source of information about device characteristics. Other indications relate to colored indicia. The colored indicia are relatively large and easily viewable from distances too great for printed text on the package body to be read comfortably (see FIG. 3A (6, 320a, 320b, 340) and FIG. 6A). The indicia is (are) colored (FIG. 2A 234a and 236a) other than black or white. Among the visible indicia characteristics which can be used to convey information are: indicia color (or colors on multi-colored indicia), shape, size, orientation, and/or location. Among the various integrated circuit device characteristics which can be conveyed by the indicia characteristics are: device function, device speed, level of testing, degree of rad-hardness, location of reference pin, side, corner or surface, location and function of groups of pins carrying related signals, etc. In order to facilitate assembly, colored indicia matching those on the integrated circuit devices can be printed on a printed circuit board substrate at locations and in orientations on the printed circuit corresponding to the correct assembled positions of the integrated circuit devices (FIG. 6A, 632b and 620b). Colored areas can also be incorporated into semiconductor packages to control (alter, modify) the thermal characteristics of the package, particularly in order that thermal stresses on a die operating within the package can be reduced and equalized'* (abstract).
This is interpreted to include a non-black colored material layer over a surface of the chip to identify the chip."

In view of the amendments to the claims it is believed to be clear that the feature of providing a cover layer which is irremovable from the surface of the chip, with the cover layer covering the indicia marked on the chip is not in any way suggested by the Rostoker patent so the rejection is now moot.

Claim Rejections - 35 USC § 103

4. Claims 1-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shamir (US 5,118,369) in view of Rostoker (US 5,644, 102)], Samonides (US 5,346, 738) and Hess, Jr. et al. (US 5,279,690). The Office Action stated as follows:

"Shamir teaches a method for marking a chip by forming marking indicia on a marking location upon an exterior surface of the chip for identification of the chip through FIG. 8 and *'the microlabels 122 may be utilized in any application in which product identification requires exceedingly small labels. Moreover, microlabels bearing other indicia such as letter or numerals, either with or without bar codes, offers IC manufacturers and others a unique microlabelling capability (see FIG 8, label 122 and FIG. 9 labels 128 and 130'* (abstract). Though Shamir doesn't teach that the labels are on chips, it would have been obvious to an artisan of ordinary skill in the art to include such labels on chips, since Shamir is t aching micr lables for small IC applications, such as circuits n wafers, and it would have been obvious to extend this to chips or other similar IC devices."

"Shamir fails to teach that th indicia is internal."

Thus it is believed to be clear that the feature of providing a cover layer which is irremovable from the surface of the chip, with the cover layer covering the indicia marked on the chip is not in any way suggested by the Shamir patent. Next, the Office Action stated as follows:

"Further, Rostoker teaches that indicia on marking locations on an exterior surface of the chip for identification exist through FIG's 2 and 3A-3B."
"Rostoker fails to teach that the indicia is internal."

Thus it is believed to be clear that the feature of providing a cover layer which is irremovable from the surface of the chip, with the cover layer covering the indicia marked on the chip is not in any way suggested by the Rostoker patent. Next, the Office Action stated as follows

"Samonides teaches that the indicia is internal through *'An identification label for permanently marking a metal or other etchable surface such as an automobile part with an identifying indicia is disclosed. The label has a protective cover sheet 14, a pressure sensitive adhesive 34 irremovably affixed to the cover sheet, and a liner with a release coating removably affixed to the adhesive. An identifying indicia 44 comprising an etchant in a visible vehicle such as a printing ink is printed on the adhesive at the interface of the removable liner and the adhesive so that when the liner is removed, the remaining portions of the label may be adhesively attached to the metal surface with the etchant of the identifying indicia in etching contact therewith. The identifying indicia will thus be etched into the surface of the part for a permanent marking of the part'* (abstract)." "Though Samonides doesn't teach that the label is specifically for a chip or IC device, at the time the invention was made, it would have been obvious to an artisan of ordinary skill in the art to use such a technique for chip identification since Samonides teaches that it can be used for marking a metal or other etchable, relatively small, surface. Further, it is well known that semiconductors and IC components commonly are etched, further obviating such modification to the teachings of Samonides."
"Samonides fails to teach forming a non-black optically transmissive material over at least the marking location on the one exterior surface of the chip, that it is transparent or semi-transparent. Further, Samonides fails to teach that the material is used for environmental handling and protection."

The Samonides reference is not directed to applying a permanent cover sheet which is not removable from the surface of the work piece. Instead, Samonides has a cover sheet 14 which is irremovable from the adhesive layer 34. There is no indication that the adhesive layer 34 is irremovable from the work piece. Since a permanently etched set of indicia are formed in the surface of the work piece, the adhesive layer 34 is simply indicative of the pattern of the etching solution in the first (etching) indicia printed on the inner surface of the

adhesive layer 34. Most importantly Samonides relates to etching of indicia into a metal surface and the label is temporary as explained at Col. 6, line 53, quoted as follows: "It will be apparent that the etching of th_ indicia ont the metal urface may b accomplished without the label indicia 24 and without the clear film or cover sheet 14 *because these are only a means for identifying the indicia 44 which will be etched into the metal surface*. If desired, the cover sheet may merely be a printed paper cover sheet with the label indicia printed on the exterior surface of this paper cover sheet. A much more finished appearance, however, is achieved with the smooth thermoplastic protective film or cover sheet 14 through which the label indicia 24 is visible. Since the etching indicia 44 is carried in an ink vehicle, this may be rendered visible through the composite label if both the adhesive layer 34 and the film or cover sheet 14 are transparent. In the preferred embodiment, the adhesive is opaque and forms the background for the indicia 24." [Emphasis added]

Thus it is believed to be clear that the feature of providing a cover layer covering the indicia marked on the chip with the cover layer being irremovable from the surface of the chip is not in any way suggested by the Samonides patent.

Next, the Office Action stated as follows:

"Hess, Jr. et al. teaches such a material through FIG. 10 and 'the label will have maximum life since the bar code or like indicia is protected by Mylar material' (col 4, lines 27+) and transparent protective material 11. Hess, Jr. et al. teaches the transmissive material is used for environmental protection and handling of the devices through *'a label construction provides for labels applied to a surface that have long life even outdoors, or in conditions where there are dirt or chemicals'* (abstract) and *'According to the present invention a label construction, and method of production of labels, are provided which greatly enhance label life, in a simple manner'* (col 1, lines 27+)." "Further, claim 3 is not given patentable weight, as it's a use claim.

Hess is believed to be from the non-analogous art of business forms. There is no suggestion in Hess that the film provided is irremovable. Those who use Moore business forms know that they are for Office Use and that they can be removed as can postage stamps with adhesive backing. They are not intended to be irremovable. Accordingly the reference is believed to be suitable for withdrawal from further consideration because it has nothing to do with prevention of fraud and the manufacture of industrial products such as chips and even automobile parts which require permanent marking to prevent fraud and theft. In addition, claim 3 has been amended to overcome the use claim argument.

The Office Action stated further as follows:

"Re claims 4 and 8, at the time the invention was made, it was well known in the art that conventional bar codes are read by bar code systems directing electromagnetic radiation on the marking indicia (barcode) and processing the received r fl cted radiation/images, that such reading can tak place v n when the indicia is behind a transparent lay r, such as the cas in

grocery stor , etc."

"R claim 5, though Shamir fail to t ach a n n-black optically transmissive colored material cov rs at least the marking l cation of the one xt ri r surfac of the chip, Shamir teaches" *'a color bar encoded microlabel, small enough to be placed on the surface of the die' "(Abstract) and 'The microlabels, whether color bar or black/white coded, are applied preferably at the wafer probing stage'* (abstract). This is interpreted to include color bar codes on chips and other semiconductor devices."

"Further, though Hess, Jr. et al. teaches a transparent covering/mylar above, Hess, Jr. et al. is silent to the specifics of the color."

"However, at the time the invention was made, it was well known that transparent/semi-transparent mylar could come in a variety of colors. Further, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made, to use a colored mylar. One would have been motivated to do this as a matter of design variation, since the applicant has not disclosed that a colored covering material solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with a colored/black and white bar code as taught by Shamir, in combination with the transparent covering of Hess, Jr. et al."

"Re claims 6 and 7, since Hess, Jr. et al. teaches a cover over the indicia, and Shamir teaches labeling on IC dies on wafers, this is interpreted to include preventing remarking indicia or identification marks on the chip/silicon for a semiconductor package, especially since silicon is well known as a semiconductor and is commonly found in wafer forms. Further, the etched or microlabels are on the device themselves, thus preventing remarking since they are not easily alterable."

At the time the invention was made, it would have been obvious to an artisan of ordinary skill in the art to combine the teachings of Shamir, Rostoker, Samonides, and Hess, Jr. et al. On would have been motivated to do this to provide a reliable, and robust way of identifying chips/semiconductor components by adding a cover to preserve the physical indicia and its genuineness, while still being able to read and identify the chip/indicia using conventional methods through the protective material layer."

As to the above arguments, the parent claims are believed to be patentable and the additional features in combination are believed to enhance the degree of patentability of the combinations claimed.

In paragraph 5, claims 9, 12,13-17, 19-22, and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker in view of Samonides and Hess, Jr. et al. The Office Action stated as follows:

"Rostoker teaches a semiconductor, integrated circuit chip having surfaces including a planar front surface, a planar back surface and edges of the chip between the planar surfaces with at least on electrical contact site on a surface ti1lough FIG 2 and FIG. 6. Rostoker teaches marking indicia 320a, 320b and 632b upon an exterior marking portion of a surface of the chip for identifying the chip through Figs. 3A-3B, and 6A."

"However, Rostoker fails to teach that the indicia is internal, forming a non-black layer covering the exterior surface of the chip at least at the exterior marking portion thereof, the non-black layer being c mpos d, f a colored, optically transmissive, transpar nt material preventing remarking, whereby the indicia are visible through th non-black layer."

"Samonides teaches that the indicia is internal through 'An identification lab l for permanently marking a m tal r other tchable urface such as an aut m bil part with an identifying

indicia is dis l s d. The label has a prot ctiv c ver sheet 14, a pressur sensitive adhesiv 34 irremovably affixed to the cover sheet, and a liner with a release c ating rem vably affix d to the adhesive. An identifying indicia 44 comprising an etchant in a visible vehicle such as a printing ink is printed on the adhesive at the interface of the removable liner and the adhesive so that when the liner is removed, the remaining portions of the label may be adhesively attached to the metal surface with the etchant of the identifying indicia in etching contact therewith. The ident-ifying indicia will thus be etched into the surface of the part for a permanent marking of the part" (abstract). Though Samonides doesn't teach that the label is specifically for a chip or IC device, at the time the invention was made, it would have been obvious to an artisan of ordinary skill in the art to use such a technique for chip identification since Samonides teaches that it can be used for marking a metal or other etchable, relatively small, surface. Further, it is well known that semiconductors and IC components commonly are etched, further obviating such modification to the teachings of Samonides."

"Samonides fails to teach forming a non-black layer covering the exterior surface of the chip at least at the exterior marking portion thereof, the non-black layer being composed, of a colored, optically transmissive, transparent material preventing remarking the indicia on the exterior marking surface of the chip, whereby the indicia are visible through the non-black layer. Samonides also fails to teach that the optically transmissive material is used for environmental protection/handling of the silicon."

"Hess, Jr. et al. teaches such a material through FIG. 10 and "*the label will have maximum life since the bar code or like indicia is protected by Mylar material*" (col 4, lines 27+) and transparent protective material 11. This is interpreted to include a non-black layer covering the exterior surface of the chip at least at the exterior marking position thereof. Though Hess, Jr. fails to teach the use of the cover on an internal barcode or indicia to identify a chip, it would have been obvious to an artisan of ordinary skill in the art to apply a protective label to the indicia on the chip to cover the marking point of the label, to protect the indicia and prevent it from being tampered with or damaged, thus preventing remarking of the indicia since it is covered, and also increasing the indicia life and accuracy. Further, since the transparent protective material 11 is transparent, the indicia are visible through the layer. Though the specifics as to the color of the optically transmissive transparent cover are not disclosed, at the time the invention was made, it was well known that transparent/semi-transparent mylar could come in a variety of colors, and to use a colored mylar. One would have been motivated to do this as a matter of design choice, sine the applicant has not disclosed that a colored covering material solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with conventional transparent mylar. Re claim 19, Hess, Jr. et al. teaches a material for environmental handling/protection through FIG. 10 and '*the label will have maximum life since the bar code or like indicia is protected by Mylar material*' (col 4, lines 27+) and transparent protective material 11. Hess, Jr. et al. teaches the transmissive material is used for environmental protection and handling of the devices through '*a label construction provides for labels applied to a surface that have long life even outdoors, or in conditions where there are dirt or chemicals' (abstract) and 'According to the present invention a label construction, and method of production of labels, are provided which greatly enhance label life, in a simple manner*' (col 1, lines 27+). Further, claim 3 is not given patentable weight, as it's a use claim."

"Re claim 12, Rostoker teaches the color represents identification of the chip as discussed above in claim 11, and Shamir teaches marking indicia for identification. Therefore, at the time the invention was made, it would have been obvious to have color and indicia as means for identification. One would have been motivated to do this since Rostoker teaches that color is used to identify characteristics f th chip visibl fr m far away such as pin location, etc., wher as th bar-coded indicia taught by Shamir could identify more in-depth data that would need t be encoded in bar code form. Thus the two different identification techniques allow

diff rent l v ls and amounts of data to be stor d about the chip, thus being m r convenient and user friendly for a user who needs to use, identify, or determining specific parameters of the chip."

"Re claim 17, it has been taught above that the transmissive material is transparent. Further, at the time the invention was made, it would have been obvious to an artisan of ordinary skill in the art that the indicia taught by Rostoker or Samonides inherently prevent remarking since they are labels or etched indicia on the chip/device itself, and prevent remarking since they are not easily alterable."

"At the time the invention was made, it would have been obvious to an artisan of ordinary skill in the art to combine the teachings of Rostoker, Samonides, and Hess, Jr. et al."

"One would have been motivated to do this to provide a reliable, and robust way of identifying chips/semiconductor components by adding a cover to preserve the physical internal indicia and its genuineness, while still being able to read and identify the chip/indicia using conventional methods (barcode/color identification), through the protective material layer."

As to the above arguments, the parent claims are believed to be patentable and the additional features in combination are believed to enhance the degree of patentability of the combinations claimed.

In paragraph 6, claims 10, 18, and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker as modified by Samonides, and Hess, Jr. et al., and further in view of Shamir, as applied to claim 1. The Office Action stated as follows:

"The teachings of Rostoker as modified by Samonides and Hess, Jr. et al. have been discussed above."

"Rostoker as modified by Samonides and Hess, Jr. et al. fails to teach the internal indicia are read through the non-black optically tansmissive material in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation directed upon the indicia."

"However, at the time the invention was made, it was well known in the art that conventional bar codes are read by directing electromagnetic radiation/illumination means on the marking indicia (barcode) and processing/reading the received reflected radiation/images, and that this reading process can take place through transparent layers, as in the case of grocery stores, etc."

"It would have been obvious to an artisan of ordinary skill in the art to combine the teachings of Rostoker as modified by Samonides, and Hess, Jr. et al., and further in view of Shamir, as applied to claim 1."

"One would have been motivated to do this to provide a reliable, and robust way of identifying chips/semiconductor components by adding a cover to preserve the physical internal indicia and its genuineness, while still being able to read and identify the chip/indicia using conventional methods, through the protective material layer."

As to the above arguments, the parent claims are believed to be patentable and the additional features in combination are believed to enhance the degree of patentability of the

combinations claimed.

Attached hereto are several pages including a marked-up version of the changes made to the specification and the claims. The attached pages are captioned with "Version with markings to show changes made."

In view of the amendments and the above remarks favorable action including allowance of the claims and the application as a whole are respectfully solicited.

Respectfully submitted,

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IN THE CLAIMS

Please amend the claims to read as follows:

1. (currently amended) A method of marking an electronic integrated circuit chip having surfaces comprising the following steps:

forming internal marking indicia on a marking location upon an exterior surface of the chip for identification of the chip, and

forming ~~a non-black,~~ an optically transmissive encapsulating material over at least the marking location on the one exterior surface of the chip which ~~non-black,~~ optically transmissive material cannot be scraped off of the chip for prevention of replacement of the internal marking indicia by different markings.

2. (currently amended) The method of claim 1 wherein the ~~non-black,~~ optically transmissive material comprises a ~~non-black,~~ transparent or semi-transparent material.

3. (currently amended) The method of claim 1 wherein the ~~non-black,~~ optically transmissive encapsulating material is a protective encapsulating material adapted to provide protection from damage as the result of environmental and handling factors.

4. (currently amended) The method of claim 2 including the steps of:

directing electromagnetic radiation upon the internal marking indicia through the ~~non-black~~ optically transmissive material and

reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

5. (currently amended) The method of claim 1 wherein the ~~non-black,~~ optically transmissive material comprises a colored material.

6. (currently amended) The method of claim 1 wherein the ~~non-black,~~ optically transmissive material comprises a material such as epoxy which prevents remarking indicia or identification marks on the chip.

7. (currently amended) The method of claim 1 wherein the ~~non-black,~~ optically transmissive material prevents remarking silicon for a semiconductor package and the optically transmissive material is a transparent material.

8. (currently amended) The method of claim 7 including the steps of:

directing electromagnetic radiation upon the internal marking indicia through the ~~non-black~~ optically transmissive material, and

reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

9. (previously presented) A method of marking an electronic integrated circuit chip having surfaces
comprising the following steps:

forming a semiconductor, integrated circuit chip having surfaces including a planar front surface, a planar back surface and edges of the chip between the planar surfaces with at least one electrical contact site on a surface,

forming internal marking indicia upon an exterior marking portion of a surface of the chip for identification of the chip, and

forming a non-black layer covering the exterior surface of the chip at least at the exterior marking portion thereof, the non-black layer being composed, of a colored, optically transmissive material, which non-black layer cannot be scraped off of the chip for preventing replacement of the internal marking indicia by different markings and for preventing remarking the internal indicia on the exterior marking surface of the chip,

whereby the indicia are visible through the non-black layer.

10. (original) The method of claim 9 including the steps of:

directing electromagnetic radiation upon the internal marking indicia through the non-black optically transmissive material and

reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

11. canceled

12. (previously presented) A method of marking an electronic integrated circuit chip having surfaces comprising:

forming internal marking indicia on a marking location upon an exterior surface of the chip, and

forming a non-black, optically transparent material colored with a particular color over at least the marking location on that exterior surface of the chip wherein the material colored with the particular color together with the marking indicia represents identification of the chip which non-black, optically transparent, colored material cannot be scraped off of the chip for prevention of replacement of the internal marking indicia by different markings.

13. (currently amended) An electronic integrated circuit chip comprising:

the chip having exterior surfaces,

internal marking indicia formed on a marking location upon an exterior surface of the chip for identification of the chip, and

~~a non-black,~~ an optically transmissive material formed over at least the marking location on the one exterior surface of the chip which ~~non-black,~~ optically transmissive material cannot be easily scraped off for prevention of replacement of the internal marking indicia by different markings.

14. (currently amended) The chip of claim 13 wherein the ~~non-black,~~ optically transmissive material comprises a ~~non-black,~~ transparent or semi-transparent material.

15. (currently amended) The chip of claim 13 wherein the ~~non-black,~~ optically transmissive material comprises a colored material.

16. (currently amended) The chip of claim 13 wherein the ~~non-black,~~ optically transmissive material prevents remarking indicia or identification marks on the chip.

17. (currently amended) The chip of claim 13 wherein the ~~non-black,~~ optically transmissive material prevents remarking silicon for a semiconductor package and the optically transmissive material is a transparent material.

18. (currently amended) The chip of claim 13 wherein:

illumination means are provided for directing electromagnetic radiation upon the internal marking indicia through the ~~non-black,~~ optically transmissive material and

reading means are provided for reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

19. (currently amended) The chip of claim 13 wherein the ~~non-black,~~ optically transmissive material is adapted to provide protection from damage as the result of environmental and handling factors.

20. (currently amended) The chip of claim 14 wherein:

illumination means are provided for directing electromagnetic radiation upon the internal marking indicia through the ~~non-black~~ optically transmissive material and

reading means are provided for reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

21. (currently amended) The chip of claim 17 wherein:

illumination means are provided for directing electromagnetic radiation upon the internal marking indicia through the ~~non-black~~ optically transmissive material and

reading means are provided for reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

22. (currently amended) An electronic integrated circuit chip comprising:

a semiconductor, integrated circuit chip having surfaces including a planar front surface, a planar back surface and edges of the chip between the planar surfaces with at least one electrical contact site on a surface,

indicia marked upon an exterior marking portion of a surface of the chip for identification of the chip,

a ~~non-black~~ cover layer covering the exterior surface of the chip at least at the exterior marking portion thereof, the ~~non-black~~ cover layer being composed of a colored, optically transmissive material which ~~non-black,~~ optically transmissive material of the cover layer cannot be scraped off of the chip for prevention of replacement of the indicia by different markings and for preventing remarking the indicia on the exterior marking surface of the chip, and

the indicia being visible through the ~~non-black~~ cover layer.

23. (currently amended) The chip of claim 22 wherein:

illumination means are provided for directing electromagnetic radiation upon the internal marking indicia through the ~~non-black~~ optically transmissive material and

reading means are provided for reading the internal marking indicia in response to images of the internal marking indicia provided by reflections of the electromagnetic radiation.

24. Canceled

25. (currently amended) An electronic integrated circuit chip comprising:

internal marking indicia formed on a marking location upon an exterior surface of the chip, and

a ~~non-black,~~ optically transparent material colored with a particular color formed over at least the marking location on that exterior surface of the chip wherein the material colored with the particular color together with the marking indicia represents identification of the chip, which ~~non-black,~~ optically transmissive material cannot be scraped off of the chip for prevention of replacement of the internal marking indicia by different markings.